0.78, $p < 0.003$), TBW ($r = 0.6$, $p < 0.03$), and TBNa ($r = 0.7$, $p < 0.001$). In patients with high output CHF, aldosterone was not elevated but correlated with PRA ($r = 0.8$, $p < 0.02$) and ERPF ($r = -0.75$, $p < 0.003$). When all the groups were taken together, aldosterone continued to correlate strongly with PRA but now a weak correlation emerged with right atrial ($r = 0.46$, $p < 0.02$) and pulmonary wedge ($r = 0.45$, $p < 0.03$) pressures and cardiac output ($r = -0.43$, $p < 0.03$). We conclude that aldosterone is elevated in patients with untreated low but not high output CHF. It correlates well with PRA in all groups suggesting that PRA continues to determine aldosterone levels even in such diverse clinical states but poorly with indices of salt and water retention.

994-99 Neurohumoral Activation and Hemodilution Under Parenteral Administration of Molsidomine and Isosorbide Mononitrate

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Hemodilution and neurohumoral activation following vasodilation are thought to be major factors for the development of nitrate tolereance. To determine whether these mechanisms are part of the action profile of molsidomine (M), we investigated the hemodynamics, neurohumoral activation, and hemodilution during i.v. administration of M and isosorbide-5-mononitrate (I) in 15 patients with CHF (NYHA II–III). In a randomized, double-blind, cross-over design, each patient received a 24-hour infusion of M (6 mg/h), I (3.75 mg/h) and placebo (P). Measurements were performed at baseline, at 2 h, at 8 h, and at 24 h. Results (mean ± SEM): Both vasodilators caused a continuous increase in plasma volumes with a maximum at 24 h: I +8.2 ± 2.2% ($p < 0.0001$), M +18.5 ± 2.7% ($p < 0.0001$). Plasma volumes did not change on placebo. The plasma renin activity (ng/ml/h) is shown below:

	Baseline	2 h	8 h	24 h
P	7.50 ± 2.37	6.95 ± 2.29	7.82 ± 2.17	7.53 ± 2.41
I	7.71 ± 2.32	9.61 ± 2.62°	10.15 ± 2.32°°#	8.20 ± 2.14#
M	6.53 ± 2.17	12.01 ± 2.49°°°	15.36 ± 2.65°°°#	12.51 ± 2.74°°°#

*$p < 0.05$, **$p < 0.01$ (vs P), °$p < 05$, °°$p < 0.001$ (vs baseline) #$p < 0.05$ (I vs M)

Levels of Angiotensin II, aldosterone and vasopressin did not change significantly. Hemodynamically, a significant improvement of CO and diastolic PAP was observed at 2 h on both treatments. This effect was maintained on M at 8 h and 24 h ($p < 0.05$), but not on I.

Conclusion: Continuous infusion of I led only to a moderate hemodilution and neurohumoral activation, but development of tolerance was observed starting at 8 h. In contrast, administration of M resulted in prolonged hemodynamic effects, although pronounced changes in plasma volume and neurohumoral activation occurred. We conclude that intravasal fluid shift and/or neurohumoral activation is not a major factor in the development of nitrate tolerance.

994-100 Haemodynamical Effects of L-Carnitine on Patients With Congestive Heart Failure Due to Dilated Cardiomyopathy

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The haemodynamical effects of L-Carnitine (LC) were studied on 34 patients (pts) in a double blind study. Pts with dilative cardiomyopathy (CM) and clinical stable heart failure (HF) (NYHA III–IV) were included in the study. All pts underwent left and right cardiac catheterization (CC) and cardiopulmonary exercise test (CPX) according to Weber protocol, in a baseline (BL) examination. After one (1M) and three months (3M) treatment with placebo (18 pts) and LC (2 g/die per os)(16 pts) right CC and CPX were repeated. All conventional drugs for HF remained unchanged during the study. The following mean values were determined prior to (b) and after (a) CPX: maximal time of CPX (CPX-T) (min), peak O_2 consumption (VO_2) (ml/min/Kg), arterial/pulmonary blood pressure (ABP/PBP) (mmHg), cardiac output (CO) (L/min).

Results:

	Placebo			L-carnitine		
	BL	1M	3M	BL	1M	3M
CPX-T	7.2	6.8	7.0	8.2	9.4*	9.5*
VO_2	12.3	11.0	11.2	13.2	14.3*	14.9*
ABP(b)(S/D)	128/85	133/87	131/82	127/83	115/78*	133/83
ABP(a)(S/D)	142/96	151/94	166/96	150/92	154/95	165/95
PBP(b)(S/D)	37/13	36/17	38/16	34/12	26/8*	32/12
PBP(a)(S/D)	42/17	42/12	41/14	41/14	38/12	40/13
CO(b)	4.2	4.3	4.1	4.2	4.4	4.2
CO(a)	7.8	7.9	7.8	7.9	9.5*	9.8*

Systolic/diastolic (S/D), *$p < 0.01$, placebo vs L-carnitine

Conclusions: LC has improved CC and increased the duration of CPX. VO_2 was increased in one as well in 3 months after LC administration, thereby improving the functional status.

995 Coronary Heart Disease in the Elderly: Evaluation, Management, and Outcomes

Wednesday, March 27, 1996, 9:00 a.m.–11:00 a.m.
Orange County Convention Center, Hall E
Presentation Hour: 10:00 a.m.–11:00 a.m.

995-61 Stents in the Elderly for Failed PTCA, Early and Intermediate Term Results

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In order to determine relative acute and intermediate-term outcomes, 113 patients (pts) over age 65 undergoing intracoronary stent placement for acute or threatened artery closure during percutaneous transluminal coronary angioplasty (PTCA) were compared with 74 pts < 65 y receiving stents and with 1,602 pts ≥ 65 y having non-emergent PTCA, 1988 through 1994. Compared with the younger pts and the elderly PTCA pts, the older stent pts had similar important baseline characteristics. The technical success rate was high in all three groups, 89.4% elderly stent group, 93.2% younger stent group, 90.9% elderly PTCA pts (p = NS) and the rate of emergency bypass surgery was low; 2.7%, 5.4%, and 1.1% respectively (p = NS). The rate of mortality for the elderly stent pts was 4.4% vs 0% for stent pts < 65 y ($p = 0.067$) and 2.2% for PTCA pts ≥ 65 y (p = NS). The in-hospital MI rate was 3.5% for elderly stent pts vs 2.7% for stent pts < 65 (p = NS) and 0.8% elderly PTCA group ($p < 0.003$). The incidence of bradycardia was higher in the elderly stent pts (11.5%) than younger stent pts (1.4%)($p < 0.01$) or the elderly PTCA pts (4.1%)($p < 0.001$). The elderly stent group also had a more frequent need for blood transfusion (25.7%) and higher incidence of renal insufficiency (2.7%) vs the elderly PTCA group (6.1%, $p < 0.0001$ and 0.5%, $p < 0.05$), but not compared with the younger stent group (21.6% and 0%, p = NS).

Survival free of MI was high for all three groups, 91.7% elderly stent pts, 98.3% younger stent pts, and 90.5% elderly PTCA pts at one year.

Thus, in pts with stents placed for PTCA failure, need for blood transfusion and other vascular complications were frequent but in-hospital and intermediate term event free survival were excellent in the elderly and is similar to that of elderly pts undergoing PTCA without need for stents.

995-62 Outcome of Right Ventricular Infarction in Elderly Patients

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It is known that, among patients (pts) with inferior myocardial infarction, those who develop right ventricular infarction (RVI) have a worse prognosis, and that LV diastolic dysfunction is a common feature in elderly pts, in whom cardiac output is more dependent on LV filling presure. Therefore, it might be anticipated that RVI should have a particularly negative effect in the hemodynamics of inferior AMI in elderly pts. To confirm this hypothesis and to investigate its clinical significance, we studied the in-hospital outcome of 78 consecutive pts ≥ 75 years old admitted to the CCU with a first AMI of inferior location. We compared the pts with ECG or echocardiographic evidence of RVI (n = 30, 38%) with those without RVI. Baseline characteristics were similar in both groups except for age, which was higher in pts with RVI (81 vs 79 years old, $p = 0.01$). LV ejection fraction did not significantly differ in both groups (0.47 in pts without RVI vs 0.43 in pts with RVI). The most significant results are shown in the table.

	RVI	No RVI	p value
Shock (on admission)	23%	2%	< 0.001
Shock (in-hospital)	43%	6%	< 0.001
Ventricular arrhythmias	20%	8%	0.17
Complete AV block	30%	15%	0.1
Mortality	53%	17%	0.001

After adjustment for differences in age, infarct size, Killip class, LVEF, and development of complete AV block, RVI was selected as an independent predictor of in-hospital death (odds ratio: 9.1; 95% CI: 2.1–54; p < 0.01).

Conclusions: 1) The in-hospital fatality rate of elderly pts with a first inferior AMI complicated with RVI is very high. 2) The main cause of its poor prognosis is the high incidence of cardiogenic shock. 3) The in-hospital risk of death of elderly pts with RVI is independent of LV ejection fraction.

995-63 Outcome of Acute Myocardial Infarction in the Elderly: Does Gender Make a Difference?

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Although both gender and age are known to affect acute myocardial infarction (AMI) outcome, little is known about the relative influence of each, particularly in the thrombolytic therapy (TT) era. Accordingly, we evaluated the in-hospital courses of 2422 consecutive AMI patients (pts):

	Age ≤ 76			Age > 76		
	Male	Female	p	Male	Female	p
n (%)	1285 (73)	486 (27)	–	315 (48)	336 (52)	–
Age (yrs)	60 ± 11	65 ± 9	0.0001	81 ± 5	82 ±5	0.03
ST Elevation	57%	49%	0.002	34%	38%	0.27
TT Treatment	36%	29%	0.003	6%	7%	0.67
Hypertension	15%	15%	0.93	14%	19%	0.08
Death	7%	12%	0.0005	22%	20%	0.46

With these variables, a logistic regression model to predict AMI mortality was created. Female gender predicted mortality in patients ≤ 76 yrs; odds ratio (95% CI) 1.44 (1.01–2.00), p = 0.04. In contrast, female gender was not predictive of mortality in patients > 76 yrs; odds ratio (95% CI) 0.85 (0.57–1.27), p = 0.42. We conclude that both age and gender affect AMI outcome. The influence of gender, however, is not present in the elderly.

995-64 Quality of Life Changes After Angioplasty in the Elderly

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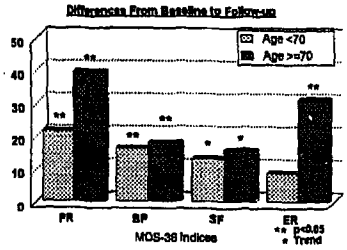
PTCA has been demonstrated to be effective in treating coronary artery disease in the elderly. However, the effect of PTCA on Quality of Life (QOL) in the elderly has not been fully evaluated.

Therefore, the Medical Outcomes Study (MOS-36), a well validated, quantitative tool to measure QOL, was administered to 113 consecutive patients, prior to and 6 months after undergoing elective PTCA. The MOS-36 includes 8 individual indices: physical roles (PR), bodily pain (BP), social functioning (SF), emotional roles (ER), physical functioning, general health, vitality and mental health. 39% of the cohort were > = 70 (Group 1), and 61% were < 70 (Group 2). The mean age was 63.5 (range 39–85). Demographics and PTCA results were similar in the two groups. Changes of the MOS-36 indices at baseline and at follow-up were compared between the two groups. Both groups had statistically significant increases in physical roles and bodily pain (p < 0.05) and a positive trend in social functioning. However, Group 1 had a statistically significant increase in emotional roles. There were no significant differences in the other indices.



In conclusion, 1) QOL after PTCA can be quantitated by using the MOS-36 in different age groups; 2) Age differences do exist in QOL changes after PTCA; 3) The elderly have more improvement in emotional roles; 4) Knowledge of QOL changes after PTCA in the elderly may assist in patient care and outcome measurements.

995-65 Prevalence and Prognostic Value of Predischarge Ventricular Ectopic Activity in Elderly Acute Myocardial Infarction Patients

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We studied in 1737 pts the prevalence of simple (Lown I–II), complex (Lown III–IV) ventricular ectopic activity (VEA) and nonsustained ventricular tachycardia (VT) on predischarge Holter, in elderly (≥ 65 yrs, 27% of population) and younger (< 65 yrs, 73% of population) AMI survivors. All pts participated in SPRINT study in 1981-3. 1-yr and 10-yr all-cause mortality rates were compared:

	Age	None	Simple	Complex	VT	p value
Prevalence	< 65	36%	38%	24%	2%	}0.001*
	≥ 65	26%	39%	32%	3%	
1-yr mortality	< 65	4%	3%	5%	8%	NS†
	≥ 65	7%	9%	9%	38%	<0.05†
10-yr mortality	< 65	22%	24%	34%	39%	<0.0001†
	≥ 65	41%	56%	56%	77%	<0.01†

*< 65 vs ≥ 65 yrs; †(p for trend) comparing mortality according to VEA.

For 1-yr mortality in multivariate analyses in young pts none of the VEA variables, including VT, had independent prognostic significance. In the elderly, VT was strongly associated with increased mortality (HR 7.12; 95% CI 1.83, 27.71), but not VEA frequency or complexity. *For 10-yr mortality,* in young pts only complex VEA (HR 1.49; 95% CI 1.13, 1.98) had independent prognostic significance. In the elderly, simple VEA (HR 1.49; 95% 1.15, 1.95) and complex VEA (HR 1.36; 95% 0.94, 1.96) were associated with increased mortality, but VT retained its strong prognostic significance (HR 3.57; 95% 1.74, 7.33).

Thus, VEA were of less importance in the young, but were independent contributors to the excess 1-yr and 10-yr mortalities observed in elderly AMI survivors.

995-66 High Short-Term Mortality of Elderly Patients With First Acute Inferior Myocardial Infarctions

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Acute myocardial infarctions of inferior location (IAMI) seem to have a better short-term prognosis compared with those of anterior location (AAMI) in the general population. It is unclear whether this difference in prognosis also apply for elderly patients (pts).

We studied 156 consecutive pts ≥ 75 years old admitted to the CCU with a first Q wave AMI. There were 84 IAMI (54%) which were compared with 72 AAMI. In-hospital fatality rate of patients with IAMI was 34%. Although 75% of patients were admitted in Killip class I, 41% developed left ventricular failure and other 17% cardiogenic shock (48% and 17% respectively in AAMI, p = NS). Compared with AAMI there were no significant differences in baseline characteristics, Killip class, maximal creatine kinase and MB fraction values except for the higher prevalence of diabetes in patients with AAMI (40% vs 23%, p = 0.02). Complete AV block was more frequent in IAMI (22% vs 0%, p < 0.001). In-hospital course showed no other differences between both groups. Mortality of patients with AAMI was 32% (p = NS).

Among pts with IAMI the risk of death was mainly related to the presence of right ventricular infarction (42%) and complete AV block (56%). Fatality rate reached 78% in pts with right ventricular infarction and complete AV block whereas it was 14% in those who did not exhibit any of the two complications.

Conclusions: Elderly patients with a first AMI of inferior location present a high in-hospital fatality rate. This poor prognosis seems to be mainly related to the presence of right ventricular infarction and/or complete AV block. The better prognosis of patients with inferior AMI compared with anterior AMI reported in the general population is not observed in an elderly group.

995-67 Is Dobutamine Stress Echocardiography Safe and Is the Echo Component Essential in Patients ≥ 75 Years of Age?

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Dobutamine stress echocardiography (DSE) has not been extensively eval-